



January 9, 2006

FILE COPY

Ms. Joan Fleck, Engineering Geologist
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Re: (1) Separate Phase Hydrocarbons Extraction from Well MW-2

Former Santa Rosa Imports
900 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR263
Clearwater Project No. AB002G

(2) Groundwater Extraction from Well MW-1A

Texaco
421 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR059
Clearwater Group Project No. AB021G

Dear Ms. Fleck:

At your request described in an October 19, 2005 letter, Clearwater Group (Clearwater) has conducted a 12-hour separate phase hydrocarbons removal from monitoring well MW-2 at the 900 Santa Rosa Avenue, Santa Rosa, CA and a 12-hour groundwater pumping from monitoring well MW-1A at the 421 Santa Rosa Avenue, Santa Rosa, CA using a high vacuum dual phase extraction technology.

Enclosed please find a letter report that Clearwater has prepared for the above activities for your review. Should you have questions, please contact me at (510) 307-9943 ext 231.

Sincerely,
Clearwater Group

Jim Ho
Principal Engineer



January 9, 2006

FILE COPY

Ms. Andrea Jensen
Santa Rosa Fire Department
955 Sonoma Avenue, Santa Rosa, CA 95404

Re: (1) Separate Phase Hydrocarbons Extraction from Well MW-2

Former Santa Rosa Imports
900 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR263
Clearwater Project No. AB002G

(2) Groundwater Extraction from Well MW-1A

Texaco
421 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR059
Clearwater Group Project No. AB021G

Dear Ms. Jensen:

At North Coast Regional Water Quality Control Board's request described in an October 19, 2005 letter, Clearwater Group (Clearwater) has conducted a 12-hour separate phase hydrocarbons removal from monitoring well MW-2 at the 900 Santa Rosa Avenue, Santa Rosa, CA and a 12-hour groundwater pumping from monitoring well MW-1A at the 421 Santa Rosa Avenue, Santa Rosa, CA using a high vacuum dual phase extraction technology.

Enclosed please find a copy of the letter report that Clearwater has prepared for the above activities. Should you have questions, please contact me at (510) 307-9943 ext 231.

Sincerely,
Clearwater Group

Jim Ho
Principal Engineer



January 9, 2006

FILE COPY

Mr. Mark Pedroia
Santa Rosa Fire Department
955 Sonoma Avenue, Santa Rosa, CA 95404

Re: (1) Separate Phase Hydrocarbons Extraction from Well MW-2
Former Santa Rosa Imports
900 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR263
Clearwater Project No. AB002G

(2) Groundwater Extraction from Well MW-1A
Texaco
421 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR059
Clearwater Group Project No. AB021G

Dear Mr. Pedroia:

At North Coast Regional Water Quality Control Board's request described in an October 19, 2005 letter, Clearwater Group (Clearwater) has conducted a 12-hour separate phase hydrocarbons removal from monitoring well MW-2 at the 900 Santa Rosa Avenue, Santa Rosa, CA and a 12-hour groundwater pumping from monitoring well MW-1A at the 421 Santa Rosa Avenue, Santa Rosa, CA using a high vacuum dual phase extraction technology.

Enclosed please find a copy of the letter report that Clearwater has prepared for the above activities. Should you have questions, please contact me at (510) 307-9943 ext 231.

Sincerely,
Clearwater Group

Jim Ho
Principal Engineer



January 9, 2006

FILE COPY

Ms. Joan Fleck, Engineering Geologist
North Coast Regional Water Quality Control Board
5550 Skylane Boulevard, Suite A
Santa Rosa, CA 95403

Re: (1) Separate Phase Hydrocarbons Extraction from Well MW-2

Former Santa Rosa Imports
900 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR263
Clearwater Project No. AB002G

(2) Groundwater Extraction from Well MW-1A

Texaco
421 Santa Rosa Avenue
Santa Rosa, CA 95404
Case No. 1TSR059
Clearwater Group Project No. AB021G

Dear Ms. Fleck:

At your request described in an October 19, 2005 comments letter for the Third Quarter 2005 Groundwater Monitoring Report, Clearwater Group (Clearwater) submitted a response letter entitled "*Response to Comments - Method of Removing Separate Phase Hydrocarbons (SPH) from Well MW-2*" on October 26, 2005. This letter proposed to use a High Vacuum Dual Phase Extraction (HVDPE) technology to extract Separate Phase Hydrocarbons (SPH) from monitoring well MW-2 located at 900 Santa Rosa Avenue, Santa Rosa, CA. The response letter also proposed to use the same technology to extract groundwater from monitoring well MW-1A located at 421 Santa Rosa Avenue, Santa Rosa, CA. The above approach for both subject sites has been verbally accepted during our December 12, 2005 telephone discussion.

This letter report briefly describes the HVDPE technology and presents the purposes, activities, results, findings, and recommendations of using this technology for the subject sites.

PURPOSES

Because the soil excavation (source removal) planned at 900 Santa Rosa Avenue will not be conducted until summer or fall of 2006 and significant floating product thickness has been identified in monitoring well MW-2 since August 2005, in the October 19, 2005 comments letter, North Coast Regional Water Quality Control Board (NCRWQCB) requested to perform an interim action to remove floating product from well MW-2. The purpose of the floating product/SPH removal is to temporarily reduce the level of impact of dissolved constituents to local groundwater before a complete soil remediation is implemented.

In order to fully utilize the available equipment, NCRWQCB also agreed to use the HVDPE technology to extract groundwater from monitoring well MW-1A located at 421 Santa Rosa Avenue. The purpose of groundwater pumping at this site is to evaluate the associated range of influence in the groundwater zone as well as the level of residual hydrocarbons in subsurface.

HIGH VACUUM DUAL PHASE EXTRACTION

The HVDPE technology uses an extremely high vacuum to extract both liquid and gaseous phases of hydrocarbons from subsurface. The proposed HVDEP system is installed on a vehicle. Compared with a fixed based in-situ remedial technology, this system occupies less space during remediation, and also has high mobility and flexibility. The HVDPE system contains the following two major components:

- A 25-horse power (hp), water-sealed liquid ring vacuum pump to extract subsurface liquid and vapor. It generates a maximum vacuum of 29-inch Hg (mercury) and handles a maximum vapor flow rate of 450 standard cubic feet per minute (scfm). It also pumps groundwater at a maximum flow rate of 50 gallons per minute (gpm).
- A thermal oxidizer to destroy the extracted and separated hydrocarbon vapors. It maintains a high temperature of 1,400 °F to 1,600 °F in the furnace and generates a heating rate of 400,000 BTU per hour with a vapor hydrocarbon destruction efficiency of at least 99%.

A flow diagram of the HVDPE system is shown in the attached figure.

ACTIVITIES

The truck-mounted HVDPE system was mobilized to the subject property at 900 Santa Rosa Avenue, Santa Rosa, CA around 8 pm on December 16, 2005. Both oil and groundwater elevations in monitoring well MW-2 were measured prior to oil extraction (see Appendix A). The system operated continuously for 12 hours from 9 pm on December 16, 2005 to 9 am on December 17, 2005. The depth of the stinger was initially placed within the thickness of the floating product, and was adjusted according to the change of groundwater elevation during the SPH extraction. The range of stinger depth

adjustment over 12 hours was less than six inches measured from the product/groundwater interface.

The same HVDPE unit was mobilized to the property at 421 Santa Rosa Avenue, Santa Rosa, CA and groundwater extraction was conducted from 10 am to 9 pm on December 17, 2005. The proposed groundwater extraction was performed in monitoring well MW-1A. Groundwater elevations in pumping well MW-1A and the associated observation wells MW-2A, MW-6, and MW-10 through MW-12 were measured prior to groundwater extraction. The stinger was placed in monitoring well MW-1A at approximately one foot above the bottom of the well screen, which was approximately ten feet below the initial groundwater surface in MW-1A. Groundwater depths of the above wells were measured once every 30 minutes during the extraction period (see Appendix A).

RESULTS

The field-measured groundwater and floating product depths as well as the extracted hydrocarbon vapor concentration, vapor flow rate, and system vacuum are summarized in this section. The field data logs and laboratory reports are included in Appendices A and B, respectively.

900 Santa Rosa Avenue

Prior to HVDPE extraction, the measured groundwater and floating product depths in MW-2 were 10.00 feet and 9.61 feet below ground surface (bgs), respectively. The apparent thickness of floating product in MW-2 was approximately five inches prior to the SPH extraction. The HVDPE extraction began at 9 pm on December 16, 2005. The system maintained an average flow rate of 36 standard cubic feet per minute (scfm) at a vacuum level of 20-inch-Hg during the 12-hour extraction until 9 am on December 17, 2005. No measurable floating product was left in MW-2 after the HVDPE system was shut off.

It should be noted that no floating product was observed in the extraction unit's oil-water separation tank. The speculated reasons are as follows:

- The floating product measured in MW-2 was light and the amount/thickness of floating product in MW-2 was not sufficiently high to be significantly accumulated within the oil-water separation tank.
- The floating product measured in MW-2 was very volatile. It was completely volatilized under a high vacuum of 20-inch Hg.

The above reasons were confirmed by the observation that flame was frequently observed at the top of the emission stack during system operation, and benzene concentration increased at the end of the SPH extraction (see Appendix B). The amount of hydrocarbons removed during the 12-hour SPH extraction has been calculated. Approximately 22.2 pounds of gasoline type hydrocarbons (equivalent to 3.5 gallons of gasoline) were removed in 12 hours from monitoring well MW-2. Approximately 60

gallons of groundwater was extracted along with the extracted floating products. The mass calculation is presented in Table 1.

421 Santa Rosa Avenue

No floating product was observed in monitoring well MW-1A prior to groundwater extraction. The HVDPE groundwater extraction was conducted from 10 am to 9 pm on December 17, 2005. The system maintained an average flow rate of 36 standard cubic feet per minute (scfm) at a vacuum level of 20-inch Hg during the 11 hours of groundwater extraction. Based on the calculated groundwater elevation change presented in Table 2, except for pumping well MW-1A and the cross gradient observation well MW-2A, groundwater draw-down did not appear in other observation wells upgradient, downgradient, or cross-gradient from MW-1A. The data suggests that:

- The potential range of influence is likely less than 60 feet measured from monitoring well MW-1A
- The subsurface sediments are not homogeneous. Although the subsurface porous media is predominantly clayey, sandy lenses are either non-continuous or limited.

Also, unlike the SPH extraction performed for well MW-2 located at 900 Santa Rosa Avenue, the stinger was inserted near to the bottom of well MW-1A. However, only approximately 140 gallons of groundwater was extracted from MW-1A in 11 hours during rain event. It suggests that the subsurface sediments have low permeability and groundwater yield.

In addition, although the stinger was inserted near to the bottom of well MW-1A, both the vapor flow and system vacuum were similar to those observed at 900 Santa Rosa Avenue. This observation once again suggests that subsurface media under both 900 Santa Rosa Avenue and 421 Santa Rosa Avenue have similar characteristics, and the saturated zone under the water table is not sufficiently permeable to transmit water quickly or recharge the extraction well under high vacuum condition.

Most importantly, high hydrocarbon concentration measured in the influent of MW-1A was approximately five times of the concentration measured in MW-2 of the 900 Santa Rosa Avenue where floating product was observed, and benzene concentration increased greatly from 3.7 ppmv to 45 ppmv at the end of the SPH extraction (see Appendix B). The measured total mass of hydrocarbons removed during the groundwater extraction activity was approximately 94.2 pounds, which is equivalent to 15.1 gallons of gasoline. The mass calculation is presented in Table 3. Due to the presence of a high vapor hydrocarbon concentration, a flame was seen at the top of the emission stack even during the daytime.

FINDINGS

- Results of the HVDPE application demonstrate that the floating product or residual SPH are light and volatile at both subject sites. Thus, the lighter hydrocarbons,

specifically THP-g, should be the target compound for groundwater monitoring at both sites.

- No measurable floating product was observed in MW-2 (900 Santa Rosa Avenue) after the HVDPE was shut off at 9 am on December 17, 2005. However, as the groundwater table recovered to the initial elevation (10 feet bgs), approximately two inches of floating product was once again measured five hours after the HVDPE was shut off.
- Floating product has been measured in MW-2 (900 Santa Rosa Avenue) during dry seasons, and it also recovers quickly after the SPH extraction. This situation confirms that either soil excavation (source removal) or an HVDPE with longer duration should be implemented.
- A high hydrocarbon removal rate of 8.6 pounds per hour was obtained from MW-1A (421 Santa Rosa Avenue) when the HVDPE stinger was inserted at 10 feet deep below the water table. This evaluation suggests that residual SPH likely exists in the saturated zone below the water table within an area near to well MW-1A.

RECOMMENDATIONS

- The investigation of residual SPH beneath the water table at the 421 Santa Rosa Avenue, Santa Rosa should begin before an effective corrective action is identified.
- Due to the high hydrocarbon vapor concentration measured in well MW-1A located at 421 Santa Rosa Avenue, Santa Rosa, CA and a significant increase of benzene concentration at the end of the 12-hour vacuum extraction, HVDPE should be a viable interim technology to reduce the groundwater impact at 421 Santa Rosa Avenue before a final corrective action is identified.

ATTACHMENTS

FIGURES

Figure 1 – Flow Diagram of HVDPE System

TABLES

Table 1 – Hydrocarbon Mass Removal Through High Vacuum Vapor Extraction
(900 Santa Rosa Avenue)

Table 2 – Groundwater Elevation Change Caused by Pumping Well MW-1A
(421 Santa Rosa Avenue)

Table 3 – Hydrocarbon Mass Removal Through High Vacuum Vapor Extraction
(421 Santa Rosa Avenue)

APPENDICES

Appendix A – Field Data Logs

Appendix B – Laboratory Reports




CERTIFICATION

This report was prepared under the supervision of a professional State of California Professional Geologist at Clearwater Group. All statements, conclusions and recommendations are based solely upon published results from previous consultants, field observations by Clearwater Group, and laboratory analysis performed by a California DHS-certified laboratory related to the work performed by Clearwater Group.

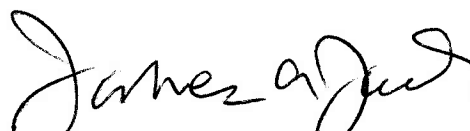
Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

The service performed by Clearwater Group has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

Sincerely,
Clearwater Group

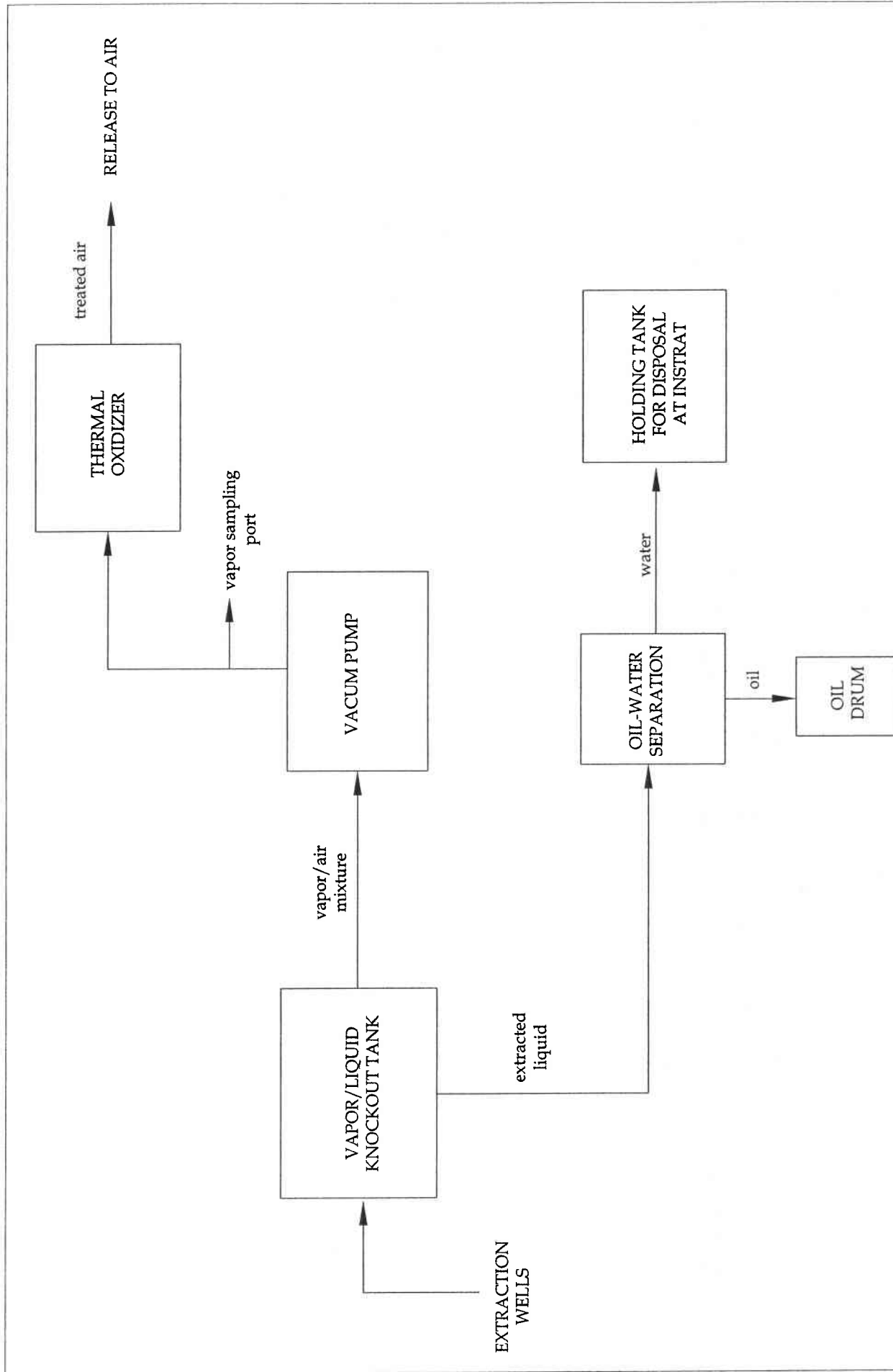

Jim Ho, Ph.D., P.E.
Principal Engineer




James A. Jacobs, PG# 4815, CHG# 88
Chief Hydrogeologist

Cc: Mr. Franklin Wolmuth, P.O. Box 640551, San Francisco, CA 94164-0551
Ms. Andrea Jensen, Santa Rosa Fire Department, 955 Sonoma Avenue, Santa Rosa,
CA 95404
Mr. Mark Pedroia, Santa Rosa Fire Department, 955 Sonoma Avenue, Santa Rosa,
CA 95404

FIGURES



*No Scale Implied

Flow Diagram of HVDPE System

CLEARWATER GROUP

Project No.
AB002G
AB021G

Figure Date
1/9/06

Figure
1

TABLES

**Table 1. Hydrocarbon Mass Removal Through High Vacuum Vapor Extraction
(900 Santa Rosa Avenue, Santa Rosa, California)**

Date	Time	Extraction	Influent Vapor	Influent TPH-g	Flow Rate	Vacuum
12/16-17/2005		Well	Conc. (ppmv) (Field)	Conc. (ppmv) (Laboratory)	(scfm)	(in Hg)
Extraction Started	21:00	MW-2	4,470	3,100	34	21
	22:00	MW-2	3,420	--	37	21
	23:00	MW-2	2,760	--	39	21
	0:00	MW-2	3,580	--	36	21
	1:00	MW-2	4,150	--	38	21
	2:00	MW-2	3,020	--	34	21
	3:00	MW-2	2,120	--	37	20
	4:00	MW-2	4,250	--	35	20
	5:00	MW-2	3,480	--	39	20
	6:00	MW-2	1,990	--	36	20
	7:00	MW-2	1,730	--	35	20
	8:00	MW-2	3,880	--	39	20
Extraction Stopped	8:57	MW-2	3,990	2,200	35	19
Average			3,295	2,650	36	20
Total Operation Time			12 hrs			
*** Calculated Hydrocarbon Mass Removed			22.2 lb (3.5 gal)	17.8 lb (2.8 gal)		

*** Hydrocarbon Mass Removed = Ave. Conc. (ppmv) * 4.16 ug/L/ppmv * Ave. Flow Rate (scfm) * Time Interval (min) * 1lb/453.6 g * (1 g/1,000,000 ug) * 28.32 L/scf

**Table 2. Groundwater Elevation Change Caused by Pumping Well MW-1A
for 11 Hours (421 Santa Rosa Avenue, Santa Rosa, California)**

Wells	Initial Groundwater Depth (ft bgs)	Final Groundwater Depth (ft bgs)	Groundwater Elevation Change ** (ft)
MW-1A	9.01	11.96 [*]	-2.95
MW-2A	8.98	9.58	-0.60
MW-6	8.80	8.65	0.15
MW-10	11.72	11.65	0.07
MW-11	8.17	8.12	0.05
MW-12	8.42	8.35	0.07

* Groundwat depth was measured at 9:30 pm after HVDPE extraction shut off at 9 pm

** Negative value represents groundwater elevation drop

**Table 3. Hydrocarbon Mass Removal Through High Vacuum Vapor Extraction
(421 Santa Rosa Avenue, Santa Rosa, California)**

Date	Time	Extraction	Influent Vapor	Influent TPH-g	Flow Rate	Vacuum
12/17/2005		Well	Conc. (ppmv) (Field)	Conc. (ppmv) (Laboratory)	(scfm)	(in Hg)
Extraction Started	10:00	MW-1A	20,000	15,000	37	20
	11:00	MW-1A	18,150	--	35	20
	12:00	MW-1A	17,340	--	36	20
	13:00	MW-1A	--	--	--	--
	14:00	MW-1A	--	--	--	--
	15:00	MW-1A	15,610	--	38	20
	16:00	MW-1A	14,870	--	37	20
	17:00	MW-1A	15,110	--	37	20
	18:00	MW-1A	12,630	--	35	20
	19:00	MW-1A	13,980	--	37	20
	20:00	MW-1A	12,610	--	36	20
Extraction Stopped	21:00	MW-1A	12,350	13,000	35	20
Average			15,265	14,000	36	20
Total Operation Time			11 hrs			
*** Calculated Hydrocarbon Mass Removed			94.2 lb (15.1 gal)	86.4 lb (13.8 gal)		

*** Hydrocarbon Mass Removed = Ave. Conc. (ppmv) * 4.16 ug/L/ppmv * Ave. Flow Rate (scfm) * Time
Interval (min) * 1lb/453.6 g * (1 g/1,000,000 ug) * 28.32 L/scf

APPENDIX A

(Field Data)

HIGH-VACUUM DUAL PHASE EXTRACTION SYSTEM FIELD DATA SHEET

CALCLEAN INC

(714) 734-9137

Page 1 of 1

Date: 12/16/2005

City: SANTA ROSA Site #: ABOO2-G

Operator (s): VAL / BERNARDO

Project Location: 400 SANTA ROSA AVE

Client: CLEARWATER GROUP

Initial Depth to Groundwater										Well #1:	Well #2:	Well #3:	Well #4:	Well #5:	Well #6:	Well #7:	Well #8:
Time	Unit Vacuum (Hg.)	Total Flowrate (scfm)	TOX Temp. (degF)	TOX Inlet Conc. (ppmv)	Slinger Depth (feet)	VAC	PTW	VAC	DTW	Vacuum "H ₂ O	DTW (ft)	Vacuum "H ₂ O	DTW (ft)	Vacuum "H ₂ O	DTW (ft)	Vacuum "H ₂ O	DTW (ft)
2100	21	34	1416	4470	OPEN	9.62		0.00	11.47		10.62						
2200	21	37	1409	3420				0.00	11.47		10.62						
2300	21	39	1405	2760				0.00	11.47		10.62						
2400	21	36	1407	3580		10.62		0.00	11.47		10.62						
12/17																	
0100	21	38	1411	4150				0.00	11.47		10.62						
0200	21	34	1407	3020				0.00	11.47		10.62						
0300	20	37	1412	2120				0.00	11.47		10.62						
0400	20	35	1409	4250				0.00	11.47		10.62						
0500	20	39	1413	3480				0.00	11.47		10.62						
0600	20	36	1405	1990				0.00	11.47		10.62						
0700	20	35	1406	1730				0.00	11.47		10.62						
0800	20	39	1412	3080				0.00	11.47		10.62						
0857	19	35	1405	3990				0.00	11.47		10.62						
0901						PTW											
0902						13.40											
0909						12.80											
0914						12.00											
0926						11.50											
0933						11.00											
0944						10.81											
0953						10.60											
1004						10.50											
1023						10.40											
						10.30											

Comments: 12/16/05 TOOK MW-2 START VAPOR SAMPLE @ 2110 (4470 ppmv). TOOK STACK @ 2115.
 12/17/05 TOOK MW-2 END @ 0855 (3990 ppmv).
 START WATER METER 1089360
 END WATER METER 1089420

HIGH-VACUUM DUAL PHASE EXTRACTION SYSTEM FIELD DATA SHEET

CALCLEAN INC.

(714) 734-9137

Page 1 of 1

Date: 12/17/2005

City: SANTA ROSA Site #: AB0216

Project Location: 421 SANTA ROSA AVENUE

Client: CLEARWATER GROUP Operator(s): VAL / BERNARDO

Initial Depth to Groundwater					Well #1: 11100-1A	Well #2:	Well #3:	Well #4:	Well #5:	Well #6:	Well #7:	Well #8:	
Screen Interval					Q.D.								
Time	Unit Vacuum (H ₂ O)	Total Flowrate (scfm)	TOX Temp. (degF)	TOX Inlet Conc. (ppmv)	Slinger Depth (feet)					Vacuum "H ₂ O"	DTW (ft)	Vacuum "H ₂ O"	DTW (ft)
1000	20	37	1552	20200	191								
1100	20	35	1542	18150									
1200	20	36	1530	17340									
1300													
1400													
1500	20	38	1522	15610									
1600	20	37	1496	14870									
1700	20	37	1453	15110									
1800	20	35	1422	12630									
1900	20	37	1416	13980									
2000	20	36	1429	12610									
2100	20	35	1420	12350									

CLEARWATER GROUP

229 Tewksbury Avenue,
Point Richmond, CA 94801
Tel: (510) 307-9943 Fax: (510) 232-2823

WELL GAUGING/PURGING CALCULATIONS DATA SHEET

Date:

Job No.:

Location:

12/17/05

AB021E

421 Santa Rosa, CA.

Tech(s): Eric V. Austin

Drums on Site @ TOA/TOD

Total number of DRUMS used for this event

Ind. H.A. - Jeremy

Soil:

Water:

Soil:

Water:

Well No.	Diameter (in)	DTW	DTW	DTW	DTW	DTW	DTW	Notes
		1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	
MW-2A	2 in	8.98	8.99	9.13	9.40	9.50	9.52	← 1/2 hr. average
		8.98	9.02	9.26	9.44	9.52	9.52	← 1/2 hr.
* MW-6	2 in	8.80	8.80	8.79	8.79	8.75	8.72	
		8.80	8.79	8.79	8.77	8.74	8.70	
* MW-10	2 in	11.72	11.72	11.71	11.74	11.65	11.65	
		11.72	11.72	11.74	11.70	11.65	11.64	
* MW-11	2 in	8.17	8.18	8.19	8.17	8.15	8.14	
		8.17	8.17	8.18	8.17	8.15	8.14	
* MW-12	2 in	8.42	8.43	8.42	8.40	8.40	8.35	
		8.44	8.42	8.41	8.40	8.39	8.34	
								9 PM
2nd	54.1 ft	7 hr	8 hr	9 hr	10 hr	11 hr	12 hr	By 4 pm water
MW-2A	2 in	9.50	9.55	9.57	9.55	9.59	9.57	Totally Pumped
		9.55	9.56	9.56	9.57	9.57	9.58	13 inches
* MW-6		8.69	8.69	8.69	8.69	8.68	8.68	20,000 @ 10 AM
		8.70	8.69	8.69	8.68	8.67	8.66	14,000 ppm @ 5 PM
* MW-10		11.60	11.65	11.68	11.67	11.69	11.67	
		11.65	11.65	11.67	11.68	11.69	11.66	
* MW-11		8.15	8.15	8.15	8.15	8.14	8.14	
		8.15	8.15	8.15	8.14	8.15	8.13	
* MW-12		8.34	8.35	8.37	8.37	8.39	8.38	12,300 ppm @ 9 PM
		8.36	8.38	8.37	8.38	8.38	8.36	
								MW 2A 11.96 @ 9:30 PM

Explanation:

DTB = Depth to Bottom

DTW = Depth to Water

ST = Saturated Thickness (DTB-DTW) must be > 1 foot

CV = Casing Volume (ST x cf)

PV = Purge Volume (standard 3 x CV, well development 10 x CV)

SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)

2-inch diameter well cf = 0.16 gal/ft

4-inch diameter well cf = 0.65 gal/ft

6-inch diameter well cf = 1.44 gal/ft

APPENDIX B
(Laboratory Reports)



Report Number : 47540

Date : 12/23/2005

Jim Ho
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 2 Vapor Samples
Project Name : 900 SANTA ROSA AVE
Project Number : AB002G

Dear Mr. Ho,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Kiff".

Joel Kiff



Report Number : 47540

Date : 12/23/2005

Project Name : 900 SANTA ROSA AVE

Project Number : AB002G

Sample : MW-2 start

Matrix : Air

Lab Number : 47540-01

Sample Date :12/16/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	14	2.5	mg/m3	EPA 8260B	12/19/2005
Toluene	70	2.5	mg/m3	EPA 8260B	12/19/2005
Ethylbenzene	180	2.5	mg/m3	EPA 8260B	12/19/2005
Total Xylenes	400	2.5	mg/m3	EPA 8260B	12/19/2005
Benzene (in ppmv)	4.5	0.80	ppmv	EPA 8260B	12/19/2005
Toluene (in ppmv)	18	0.70	ppmv	EPA 8260B	12/19/2005
Ethylbenzene (in ppmv)	42	0.60	ppmv	EPA 8260B	12/19/2005
Total Xylenes (in ppmv)	91	0.60	ppmv	EPA 8260B	12/19/2005
TPH as Gasoline	12000	250	mg/m3	EPA 8260B	12/19/2005
TPH as Gasoline (in ppmv)	3100	70	ppmv	EPA 8260B	12/19/2005
Toluene - d8 (Surr)	97.1		% Recovery	EPA 8260B	12/19/2005
4-Bromofluorobenzene (Surr)	100		% Recovery	EPA 8260B	12/19/2005

Approved By:

Joel Kiff



Report Number : 47540

Date : 12/23/2005

Project Name : 900 SANTA ROSA AVE

Project Number : AB002G

Sample : MW-2 End

Matrix : Air

Lab Number : 47540-02

Sample Date :12/17/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	21	1.5	mg/m3	EPA 8260B	12/19/2005
Toluene	30	1.5	mg/m3	EPA 8260B	12/19/2005
Ethylbenzene	91	1.5	mg/m3	EPA 8260B	12/19/2005
Total Xylenes	220	1.5	mg/m3	EPA 8260B	12/19/2005
Benzene (in ppmv)	6.6	0.40	ppmv	EPA 8260B	12/19/2005
Toluene (in ppmv)	7.9	0.40	ppmv	EPA 8260B	12/19/2005
Ethylbenzene (in ppmv)	21	0.30	ppmv	EPA 8260B	12/19/2005
Total Xylenes (in ppmv)	51	0.30	ppmv	EPA 8260B	12/19/2005
TPH as Gasoline	8900	150	mg/m3	EPA 8260B	12/19/2005
TPH as Gasoline (in ppmv)	2200	40	ppmv	EPA 8260B	12/19/2005
Toluene - d8 (Surr)	94.7		% Recovery	EPA 8260B	12/19/2005
4-Bromofluorobenzene (Surr)	103		% Recovery	EPA 8260B	12/19/2005

Approved By:

Joel Kiff

QC Report : Method Blank DataProject Name : **900 SANTA ROSA AVE**Project Number : **AB002G**

Report Number : 47540

Date : 12/23/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005
Toluene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005
Ethylbenzene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005
Total Xylenes	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005
Benzene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005
Toluene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005
Ethylbenzene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005
Total Xylenes (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005
TPH as Gasoline	< 20	20	mg/m3	EPA 8260B	12/19/2005
TPH as Gasoline (in ppmv)	< 5.0	5.0	ppmv	EPA 8260B	12/19/2005
Toluene - d8 (Surr)	99.8		%	EPA 8260B	12/19/2005
4-Bromofluorobenzene (Surr)	92.0		%	EPA 8260B	12/19/2005

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By:

Joel Kiff



2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

Project Contact (Hardcopy or PDF To):

Jim Ho

Company/Address: 224 Tewksbury Ave.
Point Richmond, CA 94801

Phone No.: 510-307-9943

FAX No.: 510-232-2778

Project Number: AB002G

P.O. No:

Project Name: 900 Santa Rosa Ave

Project Address: 900 Santa Rosa Ave

San Jose, CA

Sampler Signature:

EDF Deliverable To (Email Address):

Global ID: C.W.G.O

California EDF Report? ☐ Yes ☒ No

Recommended but not mandatory to complete this section:

Sampling Company Log Code: C.W.G.O

Chain-of-Custody Record and Analysis Request

Lab No. 47540 Page 1 of 1

Analysis Request

																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

BTEX (8021B)																
BTEX/TPH Gas/MTBE (8021B/M8015)																
TPH as Diesel (M8015)																
TPH as Motor Oil (M8015)																
TPH Gas/BTEX/M8015																
5 Oxygenates/TPH Gas/BTEX (8260B)																
7 Oxygenates/TPH Gas/BTEX (8260B)																
5 Oxygenates (8260B)																
7 Oxygenates (8260B)																
Lead Scav. (1.2 DCA & 1.2 EDB - 8260B)																
EPA 8260B (Full List)																
Volatile Halocarbons (EPA 8260B)																
Lead (7421/239.2) TOTAL (X) WET (X)																

Remarks:

Received by:

Date

Relinquished by:

Received by:

Date

Relinquished by:

Received by Laboratory:

Date

Relinquished by:

Received by Laboratory:

Date 12/19/05

Relinquished by:

Distribution: White - Lab, Pink - Originator



Report Number : 47541

Date : 12/23/2005

Jim Ho
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 2 Vapor Samples
Project Name : 421 SANTA ROSA AVE
Project Number : AB021G

Dear Mr. Ho,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Kiff".

Joel Kiff



Report Number : 47541

Date : 12/23/2005

Project Name : 421 SANTA ROSA AVE

Project Number : AB021G

Sample : MW-1A START

Matrix : Air

Lab Number : 47541-01

Sample Date :12/17/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	12	5.0	mg/m3	EPA 8260B	12/20/2005
Toluene	17	5.0	mg/m3	EPA 8260B	12/20/2005
Ethylbenzene	38	5.0	mg/m3	EPA 8260B	12/20/2005
Total Xylenes	130	5.0	mg/m3	EPA 8260B	12/20/2005
Benzene (in ppmv)	3.7	2.0	ppmv	EPA 8260B	12/20/2005
Toluene (in ppmv)	4.5	1.5	ppmv	EPA 8260B	12/20/2005
Ethylbenzene (in ppmv)	8.7	1.5	ppmv	EPA 8260B	12/20/2005
Total Xylenes (in ppmv)	30	1.5	ppmv	EPA 8260B	12/20/2005
TPH as Gasoline	58000	900	mg/m3	EPA 8260B	12/20/2005
TPH as Gasoline (in ppmv)	15000	250	ppmv	EPA 8260B	12/20/2005
Toluene - d8 (Surr)	95.9		% Recovery	EPA 8260B	12/20/2005
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	12/20/2005

Approved By:

Joel Kiff



Report Number : 47541

Date : 12/23/2005

Project Name : 421 SANTA ROSA AVE

Project Number : AB021G

Sample : MW-1A END

Matrix : Air

Lab Number : 47541-02

Sample Date :12/17/2005

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	150	2.5	mg/m3	EPA 8260B	12/20/2005
Toluene	12	2.5	mg/m3	EPA 8260B	12/20/2005
Ethylbenzene	84	2.5	mg/m3	EPA 8260B	12/20/2005
Total Xylenes	110	2.5	mg/m3	EPA 8260B	12/20/2005
Benzene (in ppmv)	45	0.80	ppmv	EPA 8260B	12/20/2005
Toluene (in ppmv)	3.0	0.70	ppmv	EPA 8260B	12/20/2005
Ethylbenzene (in ppmv)	19	0.60	ppmv	EPA 8260B	12/20/2005
Total Xylenes (in ppmv)	24	0.60	ppmv	EPA 8260B	12/20/2005
TPH as Gasoline	50000	700	mg/m3	EPA 8260B	12/20/2005
TPH as Gasoline (in ppmv)	13000	200	ppmv	EPA 8260B	12/20/2005
Toluene - d8 (Surr)	87.6		% Recovery	EPA 8260B	12/20/2005
4-Bromofluorobenzene (Surr)	99.2		% Recovery	EPA 8260B	12/20/2005

Approved By:

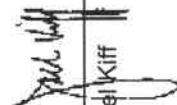
Joel Kiff

Report Number : 47541
Date : 12/23/2005

QC Report : Method Blank Data
Project Name : 421 SANTA ROSA AVE
Project Number : AB021G

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed	Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005						
Toluene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005						
Ethylbenzene	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005						
Total Xylenes	< 0.20	0.20	mg/m3	EPA 8260B	12/19/2005						
Benzene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005						
Toluene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005						
Ethylbenzene (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005						
Total Xylenes (in ppmv)	< 0.050	0.050	ppmv	EPA 8260B	12/19/2005						
TPH as Gasoline	< 20	20	mg/m3	EPA 8260B	12/19/2005						
TPH as Gasoline (in ppmv)	< 5.0	5.0	ppmv	EPA 8260B	12/19/2005						
Toluene - d8 (Surr)	99.8		%	EPA 8260B	12/19/2005						
4-Bromofluorobenzene (Surr)	92.0		%	EPA 8260B	12/19/2005						

Approved By:


Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

